

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the present application.

**Listing of Claims:**

**Claims 1-3 (canceled)**

**Claim 4 (currently amended):** A surface-coated machining tool, consisting of:

a machining tool shank having a blade portion, the blade portion fabricated from a cemented-carbide base material containing tungsten carbide and cobalt, with the cobalt inclusion amount being 4 weight % or more and 12 weight % or less; and coated to a given thickness in a single layer over said cemented-carbide base material, a compound thin film made up of a combination of, in given elemental proportions, one or more elements selected from the group titanium, chromium, vanadium, silicon and aluminum, and one or more elements selected from carbon and nitrogen; wherein

said compound thin film is vapor-deposited onto said base material under reaction-gas pressure, base-material bias voltage, and deposition-temperature conditions that, together with said given thickness and said given elemental proportions, are predetermined so as to impart a compressive residual stress of 0.1 GPa or more and 8 GPa or less to said compound thin film, [[and]]

said compound thin film has a surface roughness of  $0.01\ \mu\text{m}$  or more and less than  $0.3\ \mu\text{m}$  by indication  $R_a$ , and

said predetermined thickness of said compound thin film is  $0.05\ \mu\text{m}$  or more and less than  $1.5\ \mu\text{m}$ .

**Claim 5 (currently amended):** A surface-coated machining tool, comprising:  
a cemented-carbide base material containing tungsten carbide and cobalt, the cemented-carbide base material having a bulk cobalt concentration of 4 weight % or more and 12 weight % or less, the cemented-carbide base material including a cutting surface;

a hard carbon thin film made up essentially of carbon atoms only, coated to a ~~given~~ thickness in the range of  $0.05$  to  $0.2\ \mu\text{m}$  over the cutting surface of said cemented-carbide base material by a physical vapor deposition method in which graphite is made a raw material, and under reaction-gas pressure, base-material bias voltage, and deposition-temperature conditions that, together with said given thickness, are predetermined so as to impart a compressive residual stress of  $0.1\ \text{GPa}$  or more and  ~~$8\ \text{GPa}$~~   $1\ \text{GPa}$  or less to said compound thin film; wherein

the hard carbon thin film consists of a single layer deposited on the cemented-carbide base material such that substantially the entire hard carbon thin film is in direct contact with the cemented-carbide base material, ~~and~~

~~a concentration of cobalt at the cutting surface of the cemented carbide base material is substantially equal to the bulk cobalt concentration.~~

**Claim 6 (original):** The surface-coated machining tool set forth in claim 5, wherein said hard carbon thin film is 0.05  $\mu\text{m}$  or more, and 3  $\mu\text{m}$  or less in thickness.

**Claim 7 (canceled)**

**Claim 8 (previously presented):** The surface-coated machining tool set forth in claim 5, wherein said hard carbon thin film is in surface roughness adjusted to be 0.01  $\mu\text{m}$  or more and 0.5  $\mu\text{m}$  or less by indication Ra.

**Claim 9 (canceled)**

**Claim 10 (original):** The surface-coated machining tool set forth in claim 2, wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.

**Claim 11 (canceled)**

**Claim 12 (original):** The surface-coated machining tool set forth in claim 4, wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.

**Claim 13 (original):** The surface-coated machining tool set forth in claim 5, wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.

**Claim 14 (original):** The surface-coated machining tool set forth in claim 6, wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.

**Claim 15 (canceled)**

**Claim 16 (original):** The surface-coated machining tool set forth in claim 8, wherein the tungsten carbide in said cemented-carbide base material is 0.1  $\mu\text{m}$  or more and 1.5  $\mu\text{m}$  or less in pre-sintering crystal-grain size.

**Claim 17-18 (canceled)**

**Claim 19 (currently amended):** A surface-coated machining tool, comprising:  
a cemented-carbide base material containing tungsten carbide and cobalt,  
with the cobalt inclusion amount being 4 weight % or more and 12 weight % or less;  
and

a hard carbon thin film made up essentially of carbon atoms only, coated to a thickness in the range of 0.05 to 0.2  $\mu\text{m}$  ~~over~~ directly onto a surface of said cemented-carbide base material in a single layer, by a physical vapor deposition method in which graphite is made a raw material, and under reaction-gas pressure, base-material bias voltage, and deposition-temperature conditions that, together with said thickness, are predetermined so as to impart a compressive residual stress of 0.1 GPa or more and 1 GPa or less to said compound thin film.

**Claim 20 (currently amended):** A surface-coated machining tool, comprising:  
a cemented-carbide base material containing tungsten carbide and cobalt, the cemented-carbide base material having a bulk cobalt concentration of 4 weight % or more and 12 weight % or less, the cemented-carbide base material including a cutting surface; [[and]]

a hard carbon thin film made up essentially of carbon atoms only, coated to a thickness in the range of 0.05 to 0.2  $\mu\text{m}$  over the cutting surface of said cemented-

carbide base material, by a cathodic-arc deposition method in which graphite is made a raw material, and under reaction-gas pressure, base-material bias voltage, and deposition-temperature conditions that, together with said given thickness, are predetermined so as to impart a compressive residual stress of 0.1 GPa or more and 1 GPa or less is imparted to said hard carbon thin film; wherein

the hard carbon thin film consists of a single layer deposited on the cemented-carbide base material such that substantially the entire hard carbon thin film is in direct contact with the cemented-carbide base material;~~and~~

~~a concentration of cobalt at the cutting surface of the cemented carbide base material is substantially equal to the bulk cobalt concentration.~~

**Claims 21-24 (canceled)**